

BREAST CANCER AMONG WOMEN IN BASRAH, IRAQ: A DESCRIPTIVE STUDY IN BIRAD 1 & 2 SCREENED CASES**Hayder Hashim Abdulsamad^{*}, Mazin H Al-Hawwaz[@] & Rajaa Ahmed Mahmoud[#]**

^{*}MB,ChB, Basrah Teaching Hospital. [@]MB,ChB, CABS, FRCS Glasgow, Dean of Al Zahraa College of Medicine. [#]MB,ChB, D.CM, MPH, PhD CM, Dept. of Community Medicine, Al Zahraa College of Medicine, University of Basrah, Basrah, IRAQ.

Abstract

Breast cancer is the most commonly diagnosed cancer among women around the age of menopause. With an advice from WHO, screening programs are encouraged globally for detection of the breast cancer in early stage using mammography imaging technique that is used to understand the breast health and early detection of breast lumps.

The study aimed to determine the socio-demographic characteristics of breast cancer screened cases among women aged above 35 years in Basrah with studying the time trend of registered breast cancer cases in Basrah from 2014 to 2020. In addition, it also aimed to detect malignant cases among Breast Imaging Reporting and Data System (BIRADS) 1 & 2 breast cancer screened cases.

This is a database descriptive study using mammography medical records of women attended to Basrah Cancer screening Center in Basrah Teaching Hospital.

A total of 448 female patients who had histopathological result indicating breast cancer and were classified according to mammogram (BI-RADS) grading methodology in the period 2014-2020.

The study found that above 55 years of age multipara women were the highest group affected by breast cancer. Most importantly, malignancy was detected in 20% of breast cancer cases that were categorized as BIRAD 1 & 2.

In conclusion, women with BIRAD 1 & 2 should be included in active follow-up examinations to detect any little risk that the lesions are malignant.

Key words: Breast Cancer, Basrah, BIRAD, mammography screen.

Introduction

Breast cancer is one of the most in growing health issues that threatens female globally and especially in the developing countries because of the poor facilities and low socioeconomic status. Basically the detection of breast cancer relies on the primary healthcare centers and specialized clinics for early detection of breast cancer^{1,2}.

A new research stated that about 1.7 million new cases of breast cancers reported globally each year and 60% deaths of breast cancer or its complications happened in the developing countries³. These countries depend on their national healthcare system in the

screening process and early detection, which are poorly equipped, and need more training and experience⁴.

The most common risk factors of breast cancer are; nulliparity, using oral contraceptives, hormonal replacement therapy, low physical activity and family history⁵. In addition, many studies show no difference in the incidence of breast cancer in rural and urban areas⁶.

An increased risk of breast cancer in women with a family history of breast cancer has been demonstrated by many studies using a variety of study designs. However, this depends mainly on the type of relative relationship, if more than one

relative were affected, in addition to the age of getting the cancer⁷.

World Health Organization along with nation cancer control centers advice and encourage the screening program for detection of the breast cancer in early stage using mammography^{8,9}. The mammogram is an imaging technique used to understand the breast health, although it gives no definitive diagnosis of malignancy, but the radiologist can help by describing the findings for the surgeons that may help in taking the decision for each patient¹⁰. The extension of screening mammography has resulted in a decreased number of patients who dies from breast cancer, because mammography is sensitive for the detection of clinically occult breast cancer^{11,12}. Mammography is a highly sensitive screening test for breast cancer screening, with a positive predictive value (PPV) of 15%–30% for malignancy detection among non-palpable lesions^{13,14}.

Breast Imaging Reporting And Data System (BIRADS) is commonly used by American College of Radiology¹⁴, and most commonly as a numerical scale¹⁵: Category 0: indicates an incomplete test (non-conclusive study), Category 1: indicates normal breast tissue, Category 2: benign finding, Category 3: probably benign (carry 2%) risk of malignancy, Category 4: subdivided into; A, carry (2-9) % risk of malignancy, B, carry (10-49) % risk of malignancy, C, carry (50-95) % risk of malignancy. Category 5: indicates high suspicion of cancer (> 95% risk of malignancy), Category 6: malignancy proved with biopsy, used to compare mammography finding and the respond to treatment (surgical, chemotherapy, radiation).

Although BIRADS 1 and 2, both denote an essentially zero chance of malignancy, BIRADS 1 is used in situations where the breast is completely unremarkable, and BIRADS 2 is used when the radiologist wants to remark on a benign finding¹⁶⁻¹⁹. This study aimed to determine the general

socio-demographic characteristics of breast cancer screened cases among women above 35 years in Basrah and to detect malignant cases among BIRAD 1 & 2 categorized cases who underwent mammography screening in Basrah during the period 2014-2020.

This is a retrospective database descriptive study using mammographic medical records of women attended to Basrah Cancer Screening Center in Basrah Teaching Hospital. The lesions at the screening center are classified according BIRADS grading methodology.

Patients and methods

A total of 448 female patients who had a histopathological result indicating breast cancer and classified according to mammogram Breast Imaging Reporting And Data System (BI-RADS) grading methodology in Basra from 2014-2020.

Inclusion criteria of the study sample: Symptomatic or asymptomatic visiting Basrah Cancer Screening Center, All cases who had FNA and or biopsy taken and proved malignant.

Exclusion criteria: Any file missing the mammographic or FNA or histopathological report. The patient's medical files at the cancer screening centers that have been used during the study were usually written by radiologists and surgeons that considered as a part from the government program for early detection of breast cancer.

Socio-demographic data of patients were sourced from the patient's medical files. Cases with BIRAD 1 & 2 (which are considered to be normal and benign respectively), were investigated histopathologically for being malignant taking in consideration the patient age, parity and family history of CA breast.

Statistical analysis of the data included in the study was done by using SPSS version 20 and Microsoft Excel sheets version 2010. To validate malignancy detection, the following statistical

measures were used: Sensitivity and specificity of breast cancer malignancy detection. Positive predictive value (PPV) & Negative predictive value (NPV) of breast cancer malignancy detection among screened cases.

The study was approved by the Clinical & Ethical Committee at Basrah Directorate of Health.

Study limitations: Pandemic COVID-19 interrupted the study work especially after converting the study location to include only COVID-19's patients with closure of all other departments, missing

information registered in the patient's medical records especially for the variables: education, use of hormone therapy, use of oral contraceptives, age at first pregnancy, age of menarche and breastfeeding history.

Results

The time trend distribution of the total number of breast cancer cases registered from 2014-2020 is shown in figure 1. The study results show a sharp decrease in the total number of the registered cases for the period between 2018 and 2020.

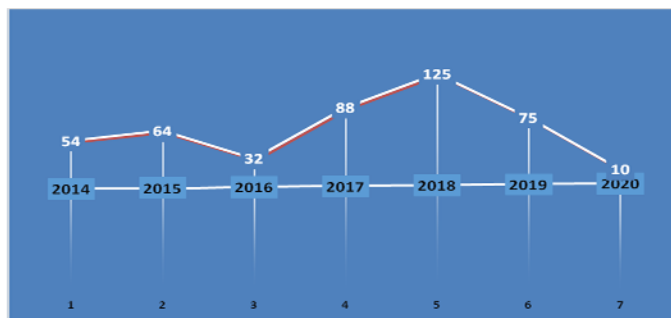


Figure 1: Time trend distribution of the total Breast cancer cases, 2014-2020.

In relation to age groups, table I shows that majority of the sampled population (80.4%) were above the age of 50 years. Above 55 years of age was also found by the study to be the highest group affected by breast cancer during the whole period from 2014-2020, while the age group of 35-40 years showed the least percentage of breast cancer cases (fig.2).

Table I: Distribution of the total sampled population according to age group.

| Age Group | Number of cases | % |
|---------------|-----------------|-------|
| (35-40) years | 8 | 1.8 |
| (40-45) years | 24 | 5.4 |
| (45-50) years | 56 | 12.5 |
| (50-55) years | 84 | 18.8 |
| (>55) years | 276 | 61.6 |
| Total | 448 | 100.0 |

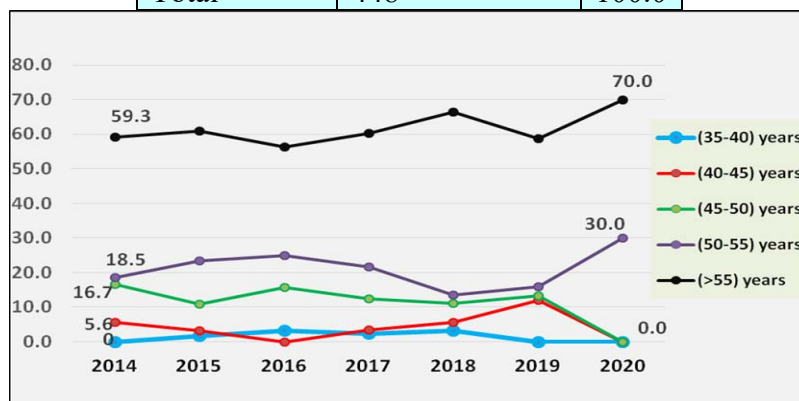


Figure 2: Time trend distribution of the study population according to age(%).

In addition, being a housewife was the mostly registered cases among women with breast cancer as shown in figure 3.

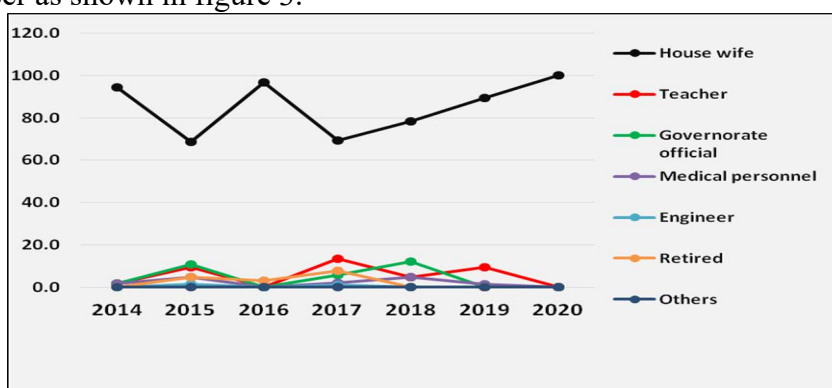


Figure 3: Time trend distribution of study population according to occupation(%).

According to address of residence, table II shows that Basrah city center is the main area with the highest percentage (60.3%) of the registered cases, followed by Al Zubair area (16.3%) and an approximate registered numbers in Shat Al Arab (4.5%) & Al Hartha areas (4.7%), while the least areas include Al Mudaina, Qurna & Fao.

Table II: Distribution of total sampled population according to place of residence.

| Place of residence | Number of cases | % |
|--------------------|-----------------|-------|
| City center | 270 | 60.3 |
| Al Zubair | 73 | 16.3 |
| Abu Alkhaseeb | 43 | 9.6 |
| Shatt Al arab | 20 | 4.5 |
| Al Mudaina | 5 | 1.1 |
| Al Hartha | 21 | 4.7 |
| Qurna | 7 | 1.6 |
| Fao | 9 | 2.0 |
| Total | 448 | 100.0 |

The time trend of this distribution is illustrated in figure 4, which shows a 100% registration of the total cancer cases to be in 2020 in Basrah City Center with no case registered for the other places in the Governorate.

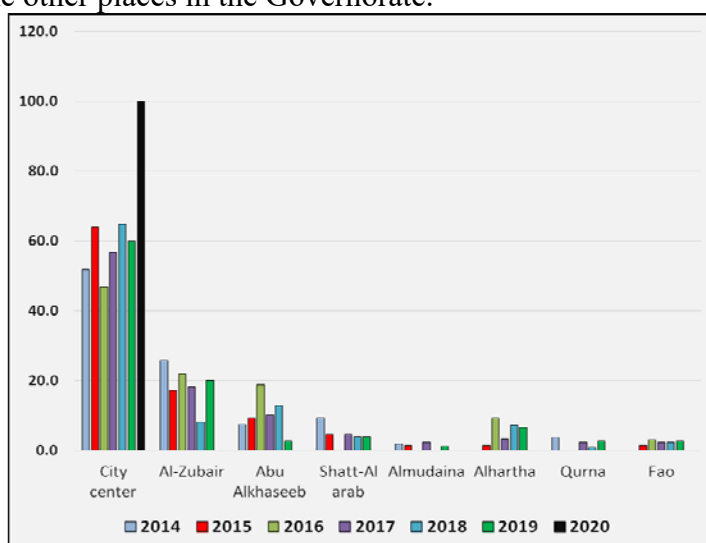


Figure 4: Time Trend distribution of study population according to Address.

Figure 5; represents the time trend of the registered cases of breast cancer among women in Basra City Center area. It clearly shows an increasing pattern over time during the period 2014-2020.

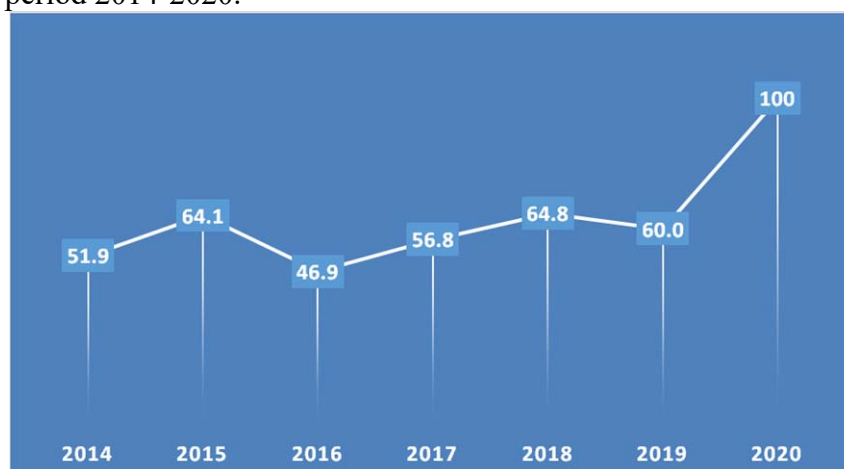


Figure 5: Time Trend percent of breast cancer reg. cases in Basra city center.

Table III shows that 54.7% of the total sampled population reported a positive family history of the disease. In regard to the family history & its time trend during the period 2014-2020, the results shows a fluctuated rates with a steady increase in the percentage of the disease occurrence for the period from 2017-2020 (Figure 6).

Table III: Distribution of the total sampled population according to family history.

| Family History | Number of cases | % |
|----------------|-----------------|-------|
| Yes | 245 | 54.7 |
| No | 203 | 45.3 |
| Total | 448 | 100.0 |

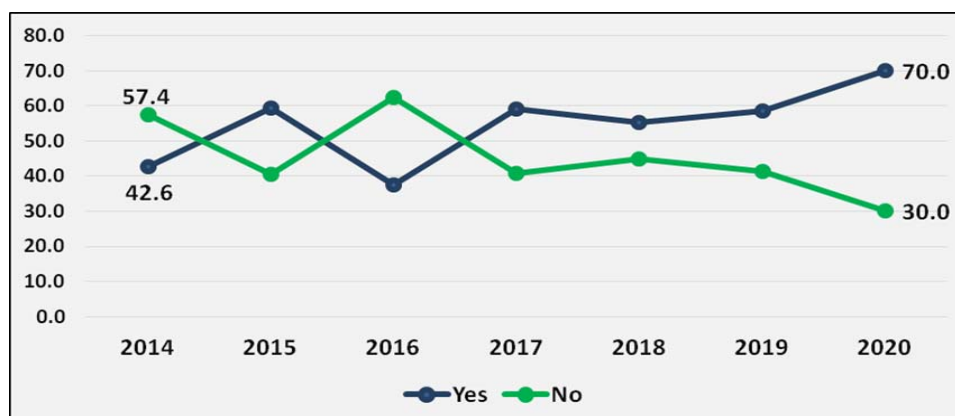


Figure 6: Time trend distribution of the study population according to the Family history (%) for the period 2014-2020.

According to parity, the study shows that the majority of the total registered breast cancer cases (84.6%) were multipara (Table IV) with a clear difference in the occurrence of the disease between nullipara and multipara with more percentage on the side of multiparity during the whole period between 2014-2020 (Figure 7) and a highest percentage of the disease occurrence in 2020 (100%).

Table IV: Distribution of the total sampled population according to parity.

| Parity | Number of cases | % |
|-----------|-----------------|-------|
| Nullipara | 69 | 15.4 |
| Multipara | 379 | 84.6 |
| Total | 448 | 100.0 |

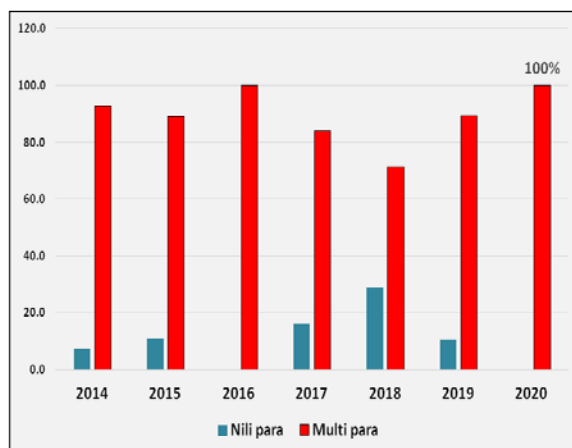
**Figure 7: Time trend distribution of the study population according to parity.**

Table V shows that 40.4% of the total registered cases reported the upper lateral quadrant to be affected, followed by the central quadrant 25.2%. The upper medial, the lower lateral & the Lower medial are 13.6%, 10.0%, 10.7% respectively.

Table V: Distribution of total sampled population according to quadrant affected.

| Quadrant | Number of cases | % |
|---------------|-----------------|-------|
| Upper lateral | 181 | 40.4 |
| Central | 131 | 25.2 |
| Upper medial | 61 | 13.6 |
| Lower medial | 48 | 10.7 |
| Lower lateral | 45 | 10.0 |
| Total | 448 | 100.0 |

With regard to BIRADS categories, table VI shows that during the period 2014-2020 & among the 448 screened breast cancer women, 94 patients (21%) that have been categorized as BIRAD 1 & 2 were found to be malignant. BIRAD 0 were excluded as the results were inconclusive (table VI).

Table VI: Distribution of the total confirmed breast cancer cases according to BIRAD category for the period 2014-2020.

| BIRAD Category | Number of Cases | % |
|----------------|-----------------|-------|
| 0 | 118 | 26.3 |
| 1 | 42 | 9.4 |
| 2 | 52 | 11.6 |
| 3 | 31 | 6.9 |
| 4 | 90 | 20.1 |
| 5 | 115 | 25.7 |
| 6 | 0 | 0.0 |
| Total | 448 | 100.0 |

Table VII shows a high sensitivity test result, which means that it was correctly detecting malignancy in 95.2 % of the breast cancer screened cases. In addition, it shows that malignancy detection noticed as negative as 86% of the non-malignancy among breast cancer screened cases for that period. The table also shows that malignancy was truly detected in 80.7% & 83.1% of the screened breast cancer cases as truly negative ones for BIRAD 1 & 2 consequently, and was detected as truly positive in 91.7% & 86.3% of the screened cases.

Table VII: The diagnostic value for malignancy confirmation among BIRAD 1 & 2 screened cases for the period 2014-2020.

| BIRAD Category | Sensitivity | Specificity | NPV | PPV |
|----------------|-------------|-------------|------|------|
| BIRAD 1 (n=42) | 95.2 | 86.1 | 80.7 | 91.7 |
| BIRAD 2 (n=52) | 92.9 | 85.7 | 83.1 | 86.3 |

Discussion

Breast cancer is considered to be among the top of the most common cancers especially among women with an increasing trend to become a big burden on the health status of both developed & developing countries²⁰. The early detection of the breast cancer through screening is increasing around the world, this increment because of the improvement in early detection and screening programs as well as the rising of educational level²¹.

In our study we found a decrease in the total number of the registered cases in the time between 2018 and 2020, this might explained by increase in the number of private breast clinics in the governorate within the hospitals or the primary health centers, Regarding the year 2019-2020 the attendance to the screening clinic declining might be due to the Pandemic of COVID-19 which makes people aware about the attendance to hospitals and primary health centers to avoid get infection with SARS COV 2 virus, adding to that the public curfew.

Educational level affect the detection of breast cancer, that those female aware about self-breast examination and attendance to health facility when they suspect breast health problem²², our study found that the most affected female are housewives which is not reflect the educational level of those females,

because the education is not included in the patient files.

According to the residency, shows that Basrah city center is the main area with the highest percentage of the registered cases during the period 2014-2020. This is because the early detection clinics located in the center of the city.

A study held in Egypt showing that the recorded cases from the city centers higher than that in the periphery residences²³. In 2020, the time trend of the total cases in Basrah city center could be explained by the pandemic of COVID-19 and curfew that makes the attendance difficult for the people lives in the peripheries.

Many studies all over the world proved a positive relation between breast cancer and family history which might be affected by age of the affected relative²⁴⁻²⁶. This is similar to what was found by the present study.

Regarding tumor location, it's known that the upper lateral quadrant is more affected by breast cancer²⁷.

Screening for breast cancer with mammography aims at detecting breast cancer at an early and curable stage²⁸. In our study, it was proved that mammography result was not 100% conclusive for malignancy detection & this might be explained by the fact that it's an operator dependent procedure in

addition to being exposed to artifacts. On the other hand, in our study, cases with BIRADS 1 and 2 found to be malignant, which is opposite to what expected according to BIRADS in many of cases included in this study. A study attribute such results to the sensitivity of mammography in dense breast tissue can be limited due to the presence of overlapping fibroglandular tissue that

reduces visibility of abnormalities²⁹. The pattern of tumor growth is considered as another factor that affecting the BIRADS adequacy, some tumors not produce mass on growth which make it difficult to be detected by mammography³⁰.

Conclusion: We conclude that the women with BIRAD 1 & 2 should be included in an active follow-up examinations to detect any possibility of malignancy.

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